

METHOD TO SELECTIVELY FILL RECESSES WITH CONDUCTIVE METAL

ABSTRACT OF DISCLOSURE

5 Recesses in a semiconductor structure are selectively
plated by providing electrical insulating layer over the
semiconductor substrate and in the recesses followed by
forming a conductive barrier over the insulating layer;
providing a plating seed layer over the barrier layer;
10 depositing and patterning a photoresist layer over the
plating seed layer; planarizing the insulated horizontal
portions by removing the horizontal portions of the seed
layer between the recesses; removing the photoresist
remaining in the recesses; and then electroplating the
15 patterned seed layer with a conductive metal using the
barrier layer to carry the current during the electroplating
to thereby only plate on the seed layer.

20 In an alternative process, a barrier film is deposited
over recesses in an insulator. Then, relatively thick
resists are lithographically defined on the field regions,
on top of the barrier film over the recesses. A plating
base or seedlayer is deposited, so as to be continuous on
the horizontal regions of the recesses in the insulator, but
25 discontinuous on their surround wall. The recesses are then
plated using the barrier film without seedlayers at the
periphery of the substrate wafers for electrical contact.

Sub
DI

THE ABOVE PROCESSES:

Year	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060	2061	2062	2063	2064	2065	2066	2067	2068	2069	2070	2071	2072	2073	2074	2075	2076	2077	2078	2079	2080	2081	2082	2083	2084	2085	2086	2087	2088	2089	2090	2091	2092	2093	2094	2095	2096	2097	2098	2099	2100
1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060	2061	2062	2063	2064	2065	2066	2067	2068	2069	2070	2071	2072	2073	2074	2075	2076	2077	2078	2079	2080	2081	2082	2083	2084	2085	2086	2087	2088	2089	2090	2091	2092	2093	2094	2095	2096	2097	2098	2099	2100	